Flu News Europe

Joint ECDC–WHO/Europe weekly influenza update

Summary

Week 13/2017 (27 March – 2 April 2017)

- Influenza activity across the region continued to decrease with all countries reporting low intensity of influenza activity.
- The number of influenza virus detections further decreased, and the proportion of influenza virus detections (16%) among sentinel surveillance specimens was lower compared to the previous week.
- This was the third week during the season that the proportion of type B viruses exceeded the proportion of type A viruses in sentinel detections. However, the overall number of type B virus detections remained low.

Season overview

- Influenza activity started early this season, in week 46/2016, which is the earliest week of the overall influenza virus-positivity rate in sentinel specimens reaching 10% since the emergence of A(H1N1)pdm09 viruses in 2009/10.
- Since week 40/2016, influenza A viruses have predominated, accounting for 91% of all sentinel detections; the great majority (99%) of subtyped influenza A viruses from sentinel sites were A(H3N2).
- Confirmed cases of influenza virus type A infection reported from hospitals have predominantly been in adults aged 65 years or older. Significant excess mortality from all causes has been observed in people aged 15–64 years and markedly so in people aged 65 years or older in the majority of the 19 reporting countries or regions. This is commonly seen when the predominant viruses circulating are A(H3N2).
- Significant excess mortality from all causes has been observed in people aged 15–64 years and markedly so in people aged 65 years or older in the majority of the 19 reporting countries or regions
- Two-thirds of the A(H3N2) viruses genetically characterized belong to subclade (3C.2a1), which is antigenically similar to the clade 3C.2a vaccine virus, as described in the WHO recommendations for vaccine composition for the northern hemisphere 2017–18. See also WHO CC report
- Vaccine effectiveness estimates for all age groups against A(H3N2) illness suggest moderate effectiveness in Canada (42%), the US (43%) and Europe (38%) are consistent with early season estimates from Finland and Sweden for persons aged 65 years and older.
- Given the suboptimal vaccination coverage and the moderate effectiveness of influenza vaccines, rapid use of neuraminidase inhibitors (NAIs) for laboratory-confirmed or probable cases of influenza virus-infection should be considered for vaccinated and non-vaccinated patients, especially if they are at risk of developing complications.
- Of the viruses tested so far, only one A(H3N2) virus (<1%) has shown reduced susceptibility to oseltamivir this season.

- The developments during the season have followed the conclusions of the ECDC risk assessment on seasonal influenza, updated on 25 January 2017, suggesting increased severe outcomes in the elderly due to the prevalence of A(H3N2) viruses, which has put health care systems under pressure.

Primary care data

Influenza activity

All 43 countries reporting on influenza activity for week 13/2017 reported a return to baseline levels with low intensity (Fig. 1). However, of the 45 countries reporting on geographic spread, 3 reported widespread and 29 local or sporadic influenza activity indicating that influenza viruses are still circulating (Fig. 2).

The proportion of influenza virus detections among sentinel specimens was 16%, which is lower compared to week 12/2017 (19%), with 11 of 16 countries reporting dominance of influenza B viruses.

Maps of qualitative indicators in the European Region

Fig. 1. Intensity in the European Region, week 13/2017

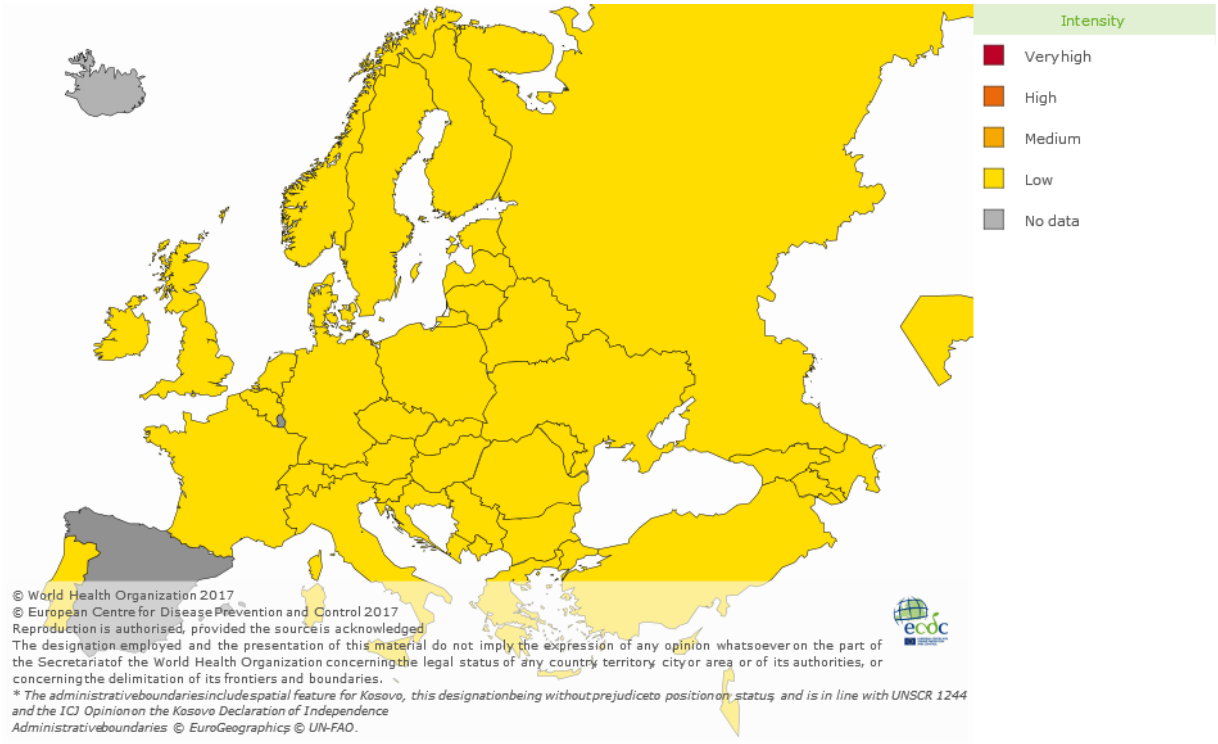
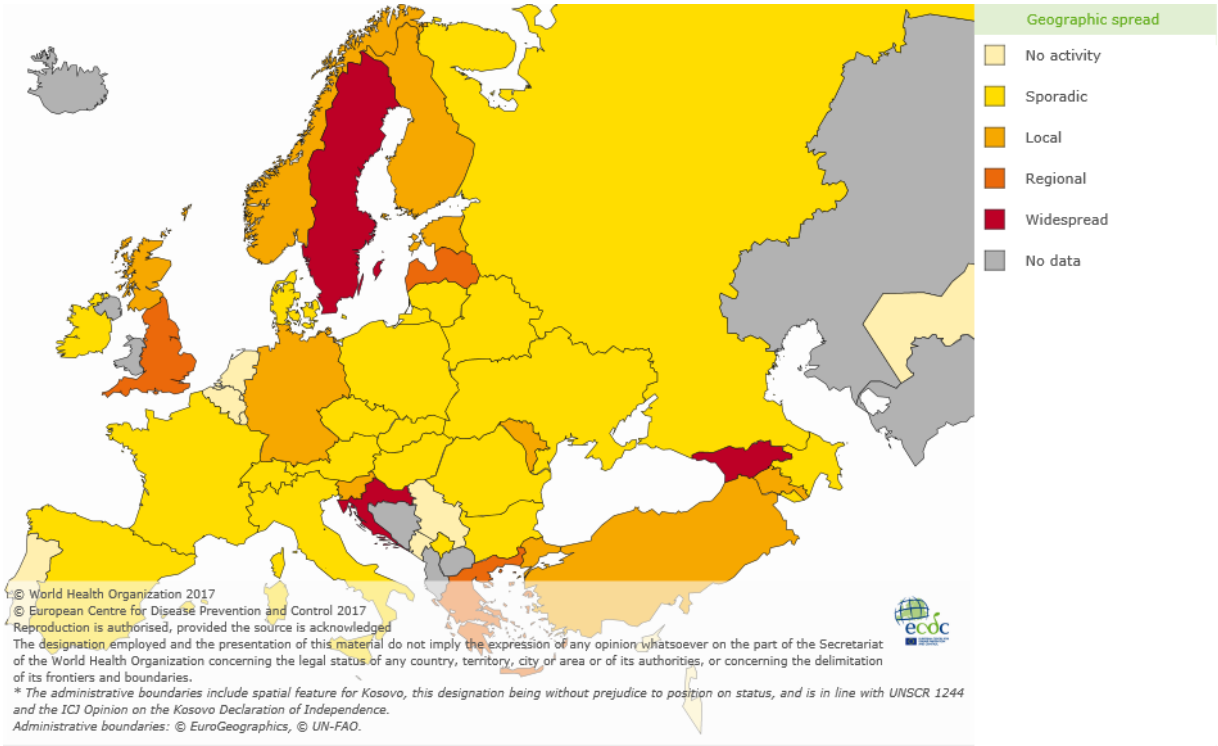


Fig. 2. Geographic spread in the European Region, week 13/2017



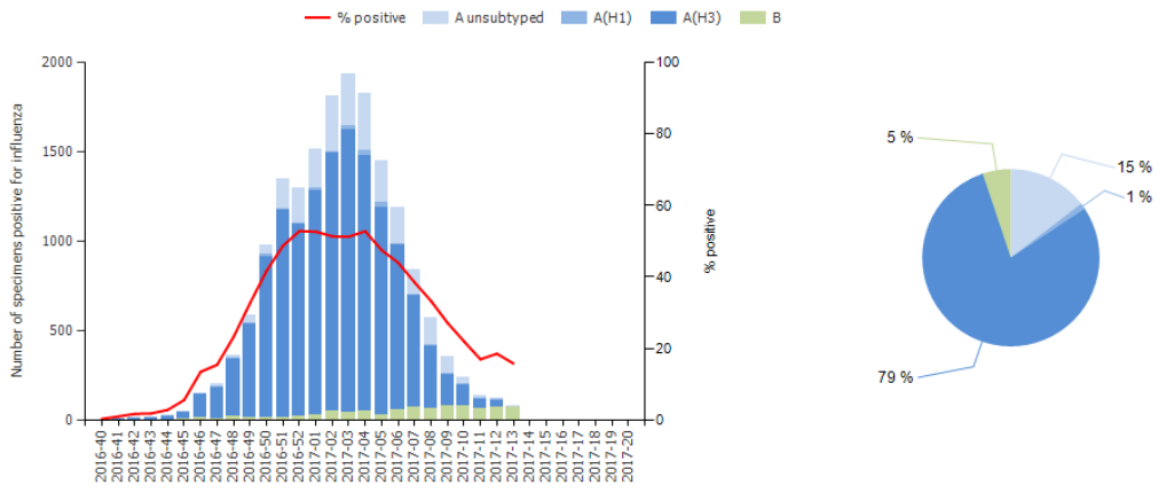
For interactive maps of influenza intensity and geographic spread, please see the Flu News Europe website.

Viruses detected in sentinel-source specimens (ILI and ARI)

For week 13/2017, 94 (16%) of 598 sentinel specimens tested positive for influenza viruses (Table 1). Of these, 90% were type B and 10% type A viruses. The proportion of type B viruses commonly increases in the second half of an influenza season. All subtyped influenza A viruses were A(H3N2). The lineage of 13 influenza B viruses was determined, of which 9 fell in B/Yamagata and 4 in B/Victoria lineages.

Since week 40/2016, similar cumulative distributions of influenza types and type A subtypes have been observed: of all typed viruses, 91% were type A, with 99% of those subtyped being A(H3N2) (Fig. 3, Table 1). Of the 683 influenza B viruses that have been ascribed a lineage since week 40/2016, 389 (57%) were of the B/Yamagata lineage and 294 (43%) were of the B/Victoria lineage.

Fig. 3. Influenza virus detections in sentinel-source specimens by type and subtype, by week



The data in the pie chart is cumulative.

Table 1. Influenza virus detections in sentinel-source specimens by type and subtype, week 13/2017 and cumulatively

Virus type and subtype	Current Week		Season 2016-2017	
	Number	%[a]	Number	%[a]
Influenza A	**9**	**10**	**16 207**	**91**
A(H1N1)pdm09	0	0	185	1
A(H3N2)	6	100	13 529	99
A not subtyped	3	-	2 493	-
Influenza B	**85**	**90**	**1 564**	**9**
B/Victoria lineage	4	31	294	43
B/Yamagata lineage	9	69	389	57
Unknown lineage	72	-	881	-
Total detections / Total tested	**94 / 598**	**16**	**17 771 / 47 922**	**37**

[a]For influenza type percentage calculations, the denominator is total detections; for subtype and lineage, it is total influenza A subtyped and total influenza B lineage determined, respectively; for total detections, it is total tested.

Severity

For week 13/2017, of the 11 countries that conduct sentinel surveillance of severe acute respiratory infection (SARI), 8 countries reported 581 SARI cases. Among these cases, 140 respiratory specimens were collected, 38 (27%) of which tested positive for influenza viruses. Since week 40/2016, 16 countries have reported 33 519 SARI cases. Of these 9 704 were tested for influenza viruses, 3 412 (35%) of which were positive: 2 695 (79%) were type A and 717 (21%) type B viruses. Of the influenza A viruses, 2 481 (92%) were A(H3N2), 6 (<1%) were A(H1N1)pdm09 and 208 (8%) were not subtyped.

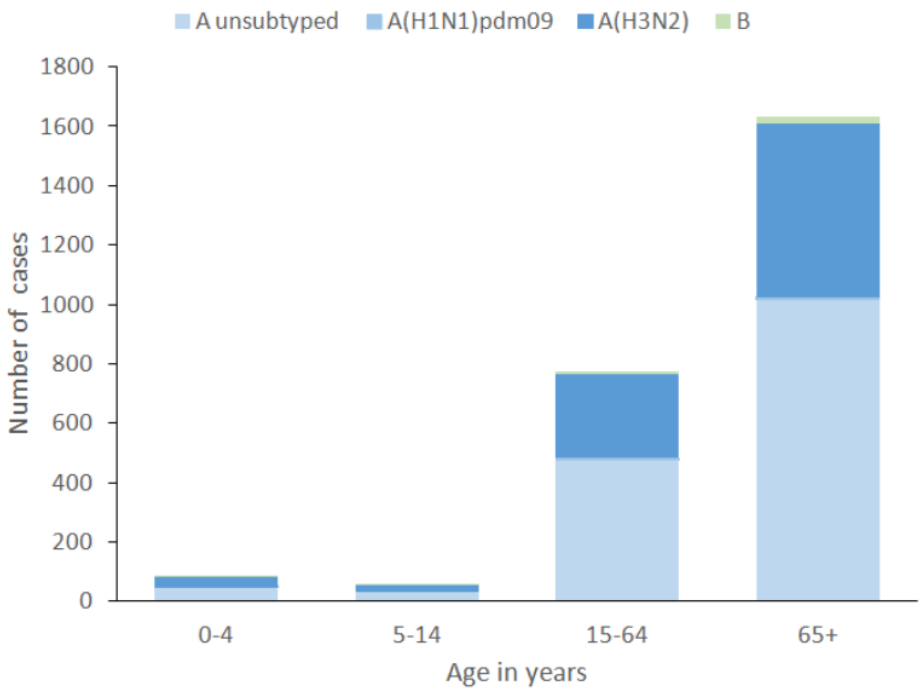
For week 13/2017, of 9 countries that conduct surveillance of hospitalized laboratory-confirmed influenza cases, 3 countries reported 14 cases, 7 in intensive care units (ICU) and 7 in other wards. Of the patients admitted to ICU, 4 were infected with influenza type A viruses (2 - influenza A not subtyped, 1 - influenza A(H1N1)pdm09), 1 - A(H3N2) and 3 with influenza B viruses. In other wards, 2 cases were infected with A not subtyped, 1 with A(H3N2) and 4 with influenza B virus.

Since week 40/2016, 5 countries have reported 3 725 laboratory-confirmed influenza cases admitted to non-ICU wards; 3 678 (99%) were infected with influenza type A viruses (2 062 - unsubtyped, 1 609 - A(H3N2), 7 - A(H1N1)pdm09), and 47 were infected with type B influenza viruses.

Since week 40/2016, 9 countries reported a total of 3 610 cases that have been admitted to ICU; 3 522 (98%) were infected with influenza type A viruses (2 131 - unsubtyped, 1 265 - A(H3N2) and 126 - A(H1N1)pdm09) and 88 with type B viruses.

Since the start of the season, most of the hospitalized laboratory-confirmed influenza cases reported have occurred in people aged 65 years or older (Fig. 4). Information on patient age and influenza virus (sub)type was available for 2 554 cases admitted to ICU; the majority of cases (64%; n=1 638) were aged ≥65 years, 778 (30%) were aged 15–64 years and 138 (5%) were aged under 15 years. In total, 887 deaths have been reported, 495 from ICUs and 392 from other wards, with 725 (82%) of the patients 65 years or older. Of all fatal cases, 878 (99%) were due to influenza A with 431 (99%) of those subtyped being A(H3N2) viruses.

Fig. 4. Distribution of virus (sub)type in influenza-confirmed cases admitted to ICU by age-group, cumulatively, during weeks 40/2016-13/2017



Mortality monitoring

Data from 19 countries or regions reporting to the Euromomo project were received for week 13/2017 and included in the pooled analyses of excess all-cause mortality.

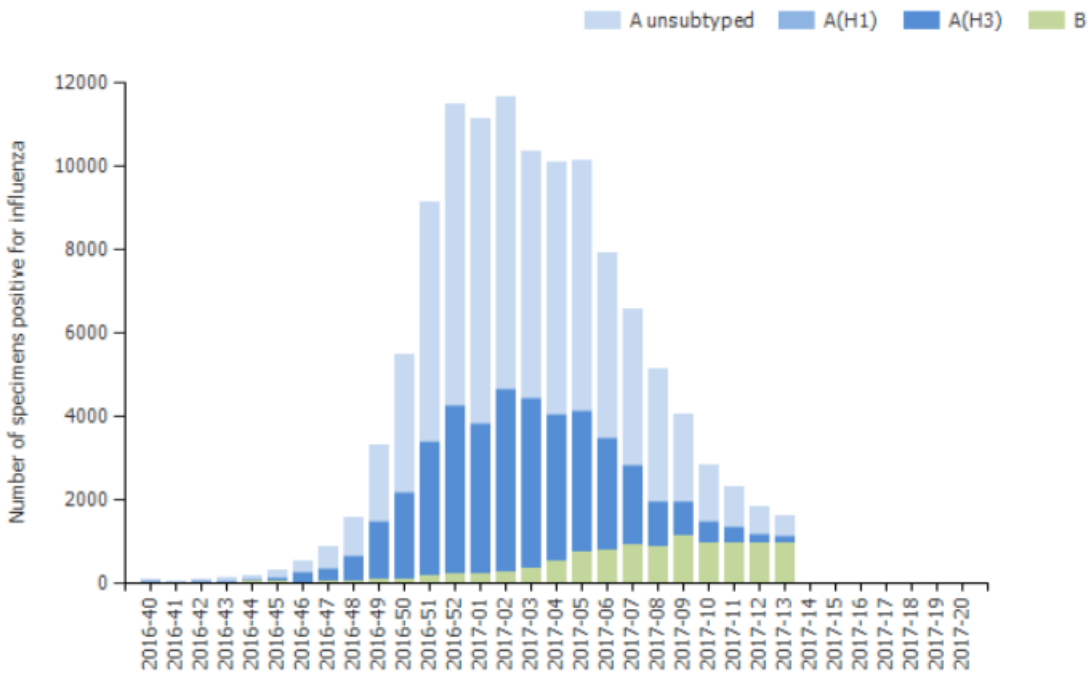
The majority of participating European countries have had a marked excess in all-cause mortality since the end of 2016, in particular among the elderly aged 65 years and above. Currently, the mortality level seems to have decreased again. This season's excess mortality coincided with circulation of influenza A(H3N2), which usually leads to increased mortality among the elderly.

Virus characteristics

Viruses detected in non-sentinel-source specimens

For week 13/2017, 1 606 specimens from non-sentinel sources (such as hospitals, schools, non-sentinel primary care facilities, nursing homes and other institutions) tested positive for influenza viruses (Fig. 5, Table 2). Of these, 39% were type A (with 97% of the subtyped viruses being A(H3N2)), and 61% type B. The increase in proportion of type B viruses corresponds to the data seen in sentinel detections, however the number of B viruses detected remained low and similar to that seen in the previous 5 weeks.

Fig. 5. Influenza virus detections in non-sentinel-source specimens by type and subtype, by week



Whilst no subtype or lineage was determined for the majority of influenza viruses, similar cumulative distributions of types and type A subtypes as seen in sentinel detections have been observed since week 40/2016: of all typed viruses, 90% were type A, with 99% of

those subtyped being A(H3N2). Of 1 118 influenza type B viruses ascribed to a lineage, 74% were B/Yamagata lineage and 26% were B/Victoria lineage (Table 2), which differs from sentinel detections where B/Victoria lineage and B/Yamagata lineage viruses have been more evenly distributed this season. The difference is mainly driven by the proportion of influenza B lineage detections in sentinel specimens in Latvia, Norway and Slovenia (B/Yamagata lineage predominant).

Table 2. Influenza viruses detected in non-sentinel-source specimens, by virus (sub)type, week 13/2017 and cumulatively

Virus type and subtype	Current Week		Season 2016-2017	
	Number	%[a]	Number	%[a]
Influenza A	**630**	**39**	**108 341**	**90**
A(H1N1)pdm09	5	3	345	1
A(H3N2)	149	97	38 637	99
A not subtyped	476	-	69 359	-
Influenza B	**976**	**61**	**11 422**	**10**
B/Victoria lineage	2	14	286	26
B/Yamagata lineage	12	86	832	74
Unknown lineage	962	-	10 304	-
Total detections / Total tested	**1 606 /12 903**	**-**	**119 763 /525 266**	**-**

[a]For influenza type percentage calculations, the denominator is total detections; for subtype and lineage, it is total influenza A subtyped and total influenza B lineage determined, respectively; as not all countries have a true non-sentinel testing denominator, no percentage calculations for total tested are shown.

Genetic characterization

For specimens collected since week 40/2016, genetic characterizations of 2 914 viruses have been reported (Table 3). Among 2 657 A(H3N2) viruses, 814 fell in the vaccine component clade (3C.2a) and 1 812 in the 3C.2a1 subclade defined by N171K amino acid substitution, often with N121K, in the haemagglutinin. Viruses in these two clades have been antigenically similar, but both clades are evolving rapidly with emergence of several virus clusters defined by additional amino acid substitutions in the haemagglutinin, thereby requiring continued monitoring of antigenic characteristics. See also WHO CC report

Table 3. Viruses attributed to genetic groups, cumulative for weeks 40/2016–13/2017

Phylogenetic group	Number of viruses
A(H1N1)pdm09 A/Michigan/45/2015 (subgroup 6B.1)[b, c]	28
A(H1N1)pdm09 A/South Africa/3626/2013 (subgroup 6B)	5
A(H3N2) A/Bolzano/7/2016 (subgroup 3C.2a1)	1 812
A(H3N2) A/Hong Kong/4801/2014 (subgroup 3C.2a)[a, b, c]	814
A(H3N2) A/Switzerland/9715293/2013 subgroup (3C.3a)	24
A(H3N2) A/Stockholm/28/2014 (subgroup3C.3b)	1
A(H3N2), subgroup not listed	6
B/Brisbane/60/2008 (Victoria lineage clade 1A)[a, b, c]	54
B/Phuket/3073/2013 (Yamagata lineage clade 3)[d]	170

[a] Vaccine component for Northern Hemisphere 2016–2017 season
[b] Vaccine component for Southern Hemisphere 2017 season
[c] Vaccine component for Northern Hemisphere 2017-2018 season
[d] Vaccine component of quadrivalent vaccines for use in both Northern and Southern Hemisphere

The recommended composition of trivalent influenza vaccines for the 2016–2017 season in the northern hemisphere was for inclusion of an A/California/7/2009 (H1N1)pdm09-like virus; an A/Hong Kong/4801/2014 (H3N2)-like virus; and a B/Brisbane/60/2008-like virus (B/Victoria lineage). For quadrivalent vaccines a B/Phuket/3073/2013-like virus (B/Yamagata lineage) virus was recommended. On 2 March 2017 WHO announced the recommended vaccine composition for the 2017–2018 season in the northern hemisphere. The recommendations matched those for the 2016–2017 season, but for the A(H1N1)pdm09 component being changed to an A/Michigan/48/2015-like virus (clade 6B.1).

Early monitoring of vaccine effectiveness (VE) in Finland and Stockholm county suggested levels of effectiveness in persons aged 65 years or older (32% and 28% VE, respectively) similar to estimates from annual multicountry studies covering the 2011–2012 and 2014–2015 seasons. More recent VE estimates for all age groups against A(H3N2) illness from Canada (42%), from the US (43%) and from Europe (38%) were consistent with the early estimates from Finland and Sweden.

Given the typically suboptimal vaccination coverage and the partial effectiveness of influenza vaccines, rapid use of neuraminidase inhibitors (NAIs) for laboratory-confirmed or probable cases of influenza infection should be considered for vaccinated and non-vaccinated patients at risk of developing complications.

Antiviral susceptibility testing

Neuraminidase inhibitor susceptibility has been assessed for 1 465 influenza viruses (1 336 A(H3N2), 26 A(H1N1)pdm09 and 103 type B) with collection dates since week 40/2016. One A(H3N2) virus, from a specimen collected in week 2/2017, showed reduced inhibition by oseltamivir in phenotypic assay. None have shown reduced inhibition by zanamivir.

This weekly update was prepared by an editorial team at the European Centre for Disease Prevention and Control (Cornelia Adlhoch, Eeva Broberg, René Snacken, Pasi Penttinen) and the WHO Regional Office for Europe (Caroline Brown, Piers Mook, Dmitriy Pereyaslov and Tamara Meerhoff, Temporary Advisor to WHO). It was reviewed by country experts (AnnaSara Carnahan, Public Health Agency, Sweden; Veronica Eder, National Public Health Center, Republic of Moldova), and by experts from the network (Adam Meijer, National Institute for Public Health and the Environment (RIVM), the Netherlands; Rod Daniels and John McCauley, WHO Collaborating Centre for Reference and Research on Influenza, Francis Crick Institute, United Kingdom; Tyra Grove Krause, Statens Serum Institut and EuroMOMO network, Denmark).

All data are up to date on the day of publication. Past this date, however, published data should not be used for longitudinal comparisons, as countries retrospectively update their databases.

The WHO Regional Office for Europe is responsible for the accuracy of the Russian translation.

Suggested citation:

European Centre for Disease Prevention and Control/WHO Regional Office for Europe. Flu News Europe, Joint ECDC–WHO weekly influenza update, week 13/2017.

Tables and figures should be referenced:

European Centre for Disease Prevention and Control/WHO Regional Office for Europe. Flu News Europe, Joint ECDC–WHO weekly influenza update, week 13/2017.